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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,350	09/23/2003	Yuji Shinkai	117259	3395

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EXAMINER	
TUGBANG, ANTHONY D	
ART UNIT	**PAPER NUMBER**
3729	

MAIL DATE	DELIVERY MODE
11/28/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/667,350	SHINKAI, YUJI	
	Examiner	Art Unit	
	A. Dexter Tugbang	3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 September 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *25-36 and 39-44* is/are pending in the application.

4a) Of the above claim(s) *27,33 and 34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *25, 26,28-32,35,36 and 39-44* is/are rejected.

7)☐ Claim(s) _ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The applicant(s) amendment filed on September 6, 2007 has been fully considered and made of record.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

3. Claims 27, 33 and 34 continue to stand as being withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on February 6, 2006.

Claim Objections

4. Claims 25, 31 and 36 are objected to because of the following informalities.

In Claim 25, the phrase of –of the plurality of pressure chambers—should be inserted after "pressure chamber" (line 8); and "the peripheries" (line 22) should be changed to –peripheries--.

In Claim 31, the phrase of –of the plurality of pressure chambers—should be inserted after "pressure chamber" (line 8); and "the peripheries" (line 22) should be changed to –peripheries--.

In Claim 36, --the—should be inserted before "lands" (line 3).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 25, 28 through 32, 35, 36 and 39 through 44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 25, it is unclear from the disclosure what is meant by the phrase of "the thermosetting resin is positioned only near the land" (line 30). With the emphasis on the term "only", how the thermosetting resin be positioned near the land when in each and every single embodiment in the specification, the thermosetting resin is not just near the land, but is also near the terminal. So the phrase contradicts the specification and is misleading and confusing.

The same problems above also occur in Claim 31.

Claim Rejections - 35 USC § 103

7. Claims 25, 28 through 31, 35, 36 and 39 through 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hiwada 6,270,193, Kishi 6,095,641and Tago et al 5,508,561.

Hiwada discloses a method of manufacturing an ink jet head comprising: an ink passage unit (e.g. 20) and a printed circuit board (e.g. 72); forming an actuator unit (e.g. 21) including a piezoelectric element (e.g. 21c) disposed on the ink passage unit (e.g. 20), a surface electrode

(e.g. 21e) disposed on the piezoelectric element and having a main electrode portion (e.g. 21e) opposed to a pressure chamber (e.g. 21d) and a connection portion opposed to a wall portion, and a land (e.g. 68, 69) disposed on the piezoelectric element, the land being electrically connected to a terminal (e.g. 62, 63); disposing a metallic bond (e.g. 64) and a thermosetting conductive adhesive (e.g. 65) between the terminal and the land; pressing the land and the terminal so that they are brought near each other, for discharging at least part of the thermosetting conductive adhesive from a gap between the land and the terminal (Fig. 11B), bringing the terminal and the metallic bond into contact with the land (Fig. 11C); and pressing and heating the metallic bond and the thermosetting conductive adhesive so that the metallic bond is disposed in a region over the land and the terminal and that the thermosetting conductive adhesive forms a protrusion that formed in the connection portion between the main electrode portion and the land (Fig. 10 and 11D).

The thermosetting conductive adhesive of Hiwada also is positioned in each pair of the land and the terminal being connected electrically and is positioned corresponding to one pair of the land and the terminal and is positioned independently of the thermosetting conductive adhesive corresponding to another pair of the land and the terminal. Also, a space exists between the one pair and the another pair of the land and the terminal with the thermosetting conductive adhesive being positioned only near the land to the same extent as the applicant(s).

Regarding Claim(s) 42 and 44, Hiwada shows in Figures 11A through 11D, a thermosetting adhesive (e.g. 65) disposed only in a region (e.g. entire ink jet passage unit 21) opposed to a wall portion of the pressure chamber.

Regarding Claim(s) 41 and 43, the sequence of Hiwada's Figure 11A-11C shows that the disposing step occurs before the pressing and heating steps.

Hiwada does not teach that: 1) the thermosetting conductive adhesive is an epoxy thermosetting resin; and 2) the land is disposed on the piezoelectric element in a region opposed to the wall portion of the pressure chamber, as required in each of Claims 25 and 31.

Kishi shows that lands (e.g. 28) must be formed on the piezoelectric element (e.g. 22A) in a region opposed to a wall portion (e.g. walls of chambers 24) to electrically connect the lands (e.g. 28) to the surface electrodes (e.g. 23 in Figs. 2 and 3). This arrangement allows the ink jet head to operate and eject ink through the pressure chambers.

It would have obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Hiwada by forming each land on the piezoelectric element in a region opposed to a wall portion of the pressure chambers, as taught by Kishi, to allow current to operate the piezoelectric element and eject ink through the pressure chambers.

Tago teaches a bonding process that includes an epoxy thermosetting resin (e.g. 6b in Fig. 14a) to achieve the very same purpose of electrically connecting and bonding a terminal (e.g. 2) and a land (e.g. 26). The thermosetting resin (e.g. 6b) of Tago corresponds to one pair and another pair of a set of terminals and lands with a space between each pair, or between the thermosetting resin for each pair.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted the epoxy thermosetting resin material of Tago for the thermosetting conductive adhesive of Hiwada, to accomplish the very same purpose of bonding a terminal to a land.

Further regarding Claims 30, 36 and 40, Hiwada does not teach that the matrix forms at least three rows and three columns of the pressure chamber in a plane of the ink passage unit.

Kishi shows that in making an ink jet print head, stacking the pressure chambers (as shown in Fig. 1) can occur to product a matrix of pressure chambers of at least three rows and at least three columns in a plane of an ink passage unit. This process of Kishi provides an increased manufacturing efficiency (col. 3, lines 7-11) and also allows more ink to eject with a higher resolution.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Hiwada, by stacking the pressure chambers to produce a matrix of pressure chambers of at least three rows and at least three columns in a plane of an ink passage unit, as taught by Kishi, to provide the advantages of increased manufacturing efficiency and allow more ink to eject with a higher resolution.

Regarding Claim(s) 39, the parameter of an Anisotropic Conductive Adhesive (ACP) is considered to be effective variable to achieve a desired result through routine experimentation. *In re Aller*, 220, F.2d 454, 105 USPQ 233, 235 (CCPA 1955). Therefore, the limitations drawn to the use of ACP for the thermosetting resin would have been an obvious improvement to one of ordinary skill in the art over Hiwada and Tago through routine experimentation.

Response to Arguments

8. The applicant(s) arguments filed on September 6, 2007 have been fully considered but they are not persuasive.

With respect to the features of the thermosetting resin being positioned in each pair of the land and the terminal and another pair of a land and a terminal with a space between each pair and another pair, respectively, these arguments have been considered to fully met and discussed with Hiwada and Tago above.

In regards to the merits of Kishi, the applicant(s) argue that Kishi does not teach that the lands are formed on the piezoelectric element in a region opposed to a wall portion to electrically connect the lands to the surface electrodes. Again, the examiner reiterates that Kishi does have this feature and is thus, obvious to combine with Hiwada. Kishi shows lands (e.g. 28) that are formed on a piezoelectric element (e.g. 22a) in a region opposed to a wall portion (e.g. walls of chambers 24) where the wall portions define each of the pressure chambers (e.g. 24) and to electrically connect the lands to the surface electrodes. So the wall portions of Kishi correspond to the pressure chambers.

Allowable Subject Matter

9. Claims 26 and 32 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The prior art does not teach a protrusion mad of the thermosetting resin with a space between one pair of a land and a terminal and another pair of a land and a terminal where the protrusion is formed to extend outside of the connecting portion and surround the land and the terminal (as required in each of Claims 26 and 32).

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 571-272-4570. The examiner can normally be reached on Monday - Friday 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. Dexter Tugbang/
Primary Examiner
Art Unit 3729

November 26, 2007